Charles Darwin University

Final Examination

Family Name						
Given Name/s						
Student Number						
Teaching Period	Semester 1, 2018					

SBI302 – Clinical Microbiology 2	DURATION	
	Reading Time:	10 minutes
	Writing Time:	120 minutes

INSTRUCTIONS TO CANDIDATES

Section A: Suggested Time: 20 Mins	**Multiple Choice Questions**: Answer ALL questions 1 Mark per question, Total: 20 Marks **Answer on multiple choice answer sheet**
Section B: Suggested Time: 28 mins	**Very Short Answer Questions**: Answer ALL questions Marks as indicated, Total: 28 Marks **Answer on examination question sheet**
Section C: **Suggested Time:** 12 minutes	**Short Answer Questions:** Answer ALL questions Three marks per question, Total: 12 marks **Answer in examination book**
Section D: Suggested Time: 60 mins	**Long Answer Questions:** Answer **FOUR OF THE SIX** questions. Marks as indicated, Total: 60 Marks **Answer in examination book.**

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
None	1 x 20 Page Book 1 x 5-Multiple Choice Answer Sheet

Section A

Section B

Very short answer questions.

Total No of Marks for this section: 28

This section should be answered in the space provided on the question sheet.

Marks for each question are indicated. Suggested Time allocation for Section B: 28 minutes

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Question 1

Please match an item in the left column with an item in the right column, by drawing lines. Five lines only to be provided, with each item indicated once and once only.

(Marks: 5)

Epidermophyton	Dog associated
Sporothrix	Asteroid body
Basidiobolus	Onchomycosis
Blastomycosis	Related to *Penicillium*
Talaromyces	Frog associated

Question 2

List five pathogenic species of yeast, and for each provide an important characteristic of the either the organism, or the disease(s) that it causes. Confine your answers to organisms that are principally known as yeasts, i.e. do not include organisms generally classed as primarily soil-borne dimorphic fungi.

Yeast species	Characteristic

(Marks: 5)

Question 3

Please respond to the following statements by indicating if each statement is **TRUE** or **FALSE**. Justify your answer with an example and/or a supporting fact.

a. Paracoccidioidomycosis is associated with desert regions.

(Marks:2)

b. Some but not all *Candida* species produce filamentous growth under some conditions

(Marks:2)

c. Negative strand RNA virus particles must encompass at least one enzyme.

(Marks:2)

d. There is such a thing as "the common cold virus:"

(Marks:2)

e. Creutzfeldt-Jacob disease is caused by a chronic viral infection.

(Marks:2)

f. Adenovirus is always transmitted by the faecal-oral route.

(Marks:2)

g. Orthomyxovirus causes a camel-associated respiratory disease.

(Marks:2)

h. A herpesvirus is of concern to transplant patients.

(Marks:2)

i. Elimination of smallpox was assisted by the destruction of animal reservoirs of disease.

(Marks:2)

Section C.

Short Answer Questions.

Total No of Marks for this section: 12

This section should be answered in the Examination Book provided.

Marks for each question are indicated. Suggested time allocation for Section C: 12 minutes

Question 1

Define the difference between definitive and intermediate parasite hosts, and give **ONE** example of a parasite where humans are the intermediate host, and **ONE** example of a parasite where humans are the definitive host. In your answer, briefly justify why humans are classed as definitive or intermediate hosts for these parasites, with reference to the relevant parts of the parasite life cycles.

(Marks: 3)

Question 2

Briefly discuss this statement: 'Protozoan parasites are much more diverse that parasites not regarded as protozoa".

(Marks: 3)

Question 3

Outline the hookworm life cycle.

(Marks:3)

Question 4

Name three parasite genera where diagnosis is frequently performed by microscopic examination of blood. Include in your answer a significant fact concerning the diseases caused.

(Marks:3)

Section D

Long Answer Questions

Total Number of Marks for this section: 60

ANSWER FOUR OF THE SIX QUESTIONS

This section should be answered in the Examination Book provided.

Marks for each question are indicated. Suggested time allocation for Section D: 60 minutes

Question 1

Describe the relationship between the nature of the viral genome (i.e. the type, and strand(s) of nucleic acid), and how that constrains and influences the location in the host cell for genome replication, the complement of genes in the viral genome, and make-up of the capsid. Provide specific examples of viruses to illustrate your points.

(Marks: 15)

Question 2

Provide an account of positive strand RNA viruses that cause respiratory disease in humans. Include in your answer, descriptions of the viruses and their life cycles, and short descriptions of the diseases caused.

(Marks: 15)

Question 3

Successful development of a vaccine for a viral pathogen requires both that development is possible and practical, and the benefits of the vaccine justify the investment in vaccine development research. Provide three examples of viruses for which there are human vaccines, and describe why you think the vaccine development was seen as being worth the investment. Also, list three viral pathogens of humans for which there is no vaccine in general use, and discuss possible reasons why no vaccine has been developed and/or introduced into practice.

(Marks: 15)

Question 4

Provide a detailed account of human disease caused by the families *Togaviridae* and *Flaviviridae*. Include in your answer transmission mechanisms, and examples of public health interventions, including a highly innovative initiative developed in Australia.

(Marks: 15)

Question 5

Provide a detailed account of the HIV life cycle, and the human disease it causes.

(Marks: 15)

Question 6

Compare and contrast PCR and Sanger sequencing. Include in your answer the purposes and mechanisms of each method.

(Marks: 15)

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